Chemical Age 5 July 1947

WITH METALLURGICAL SECTION

THE CHEMICAL AGE

VOL LVII 5 JULY 1947 No 1460

Tech.

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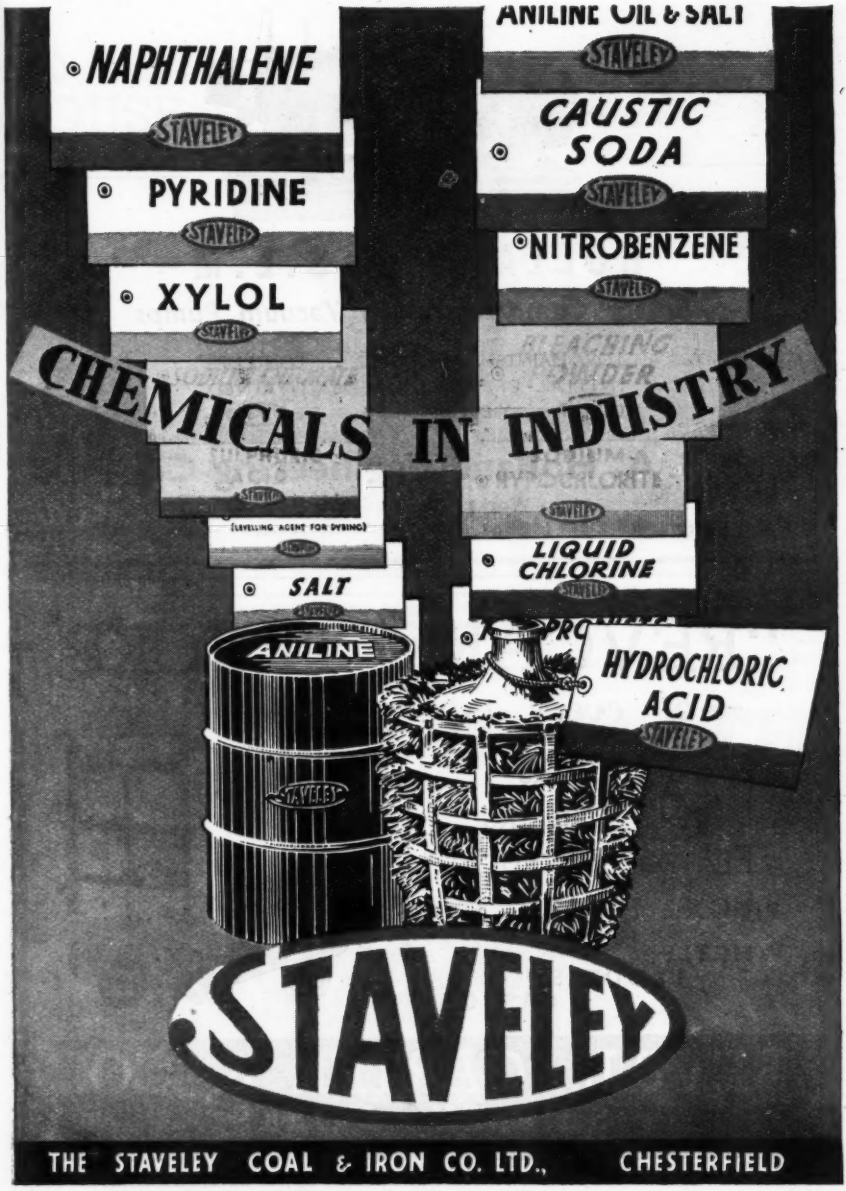
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The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

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Human Management

MODERN industry may be divided arbitrarily into two parts. In the first group will come the small firms below a minimum size which are sufficiently small for the owner, the managing director or the general manager to know personally at least by sight and by name every individual in the factory. There is little doubt that under proper management these firms are generally the happiest because the personal relationship enables problems and difficulties to be dealt with at top level immediately they arise. We had the privilege recently of visiting such a firm, not in the chemical industry, but making instruments that are used in every industry. We were told on all sides of the happiness of this relationship and of how the managing director on his rounds through the workshops was hailed by his christian name by nearly every workman. The door to his office is open at all times and any member of the organisation whatever his rank can walk straight in and put his complaint, if he should have one, or get advice on his private problems. Organisations of this kind have been the backbone of the industrial life of the country for 200 years and more.

Management in these smaller groups is a very personal matter and depends on the tact and personality of the manager, whatever may be his official title. There are inevitably managers who are miscast, but we confess that for ourselves we are acquainted with so many well-managed concerns that we are disposed to believe that the miscast are in a very small minority.

Valuable and useful as are firms of the size and type of those included in the first group we have to acknowledge that under modern conditions it is only in certain industries or under certain conditions that these firms can continue to operate successfully. Wherever materials have to be made in large quantities the number of employees becomes so great that the management cannot know personally each individual in the undertaking. These larger concerns with from 500 to many thousands of employees need a different type of organisation. What that organisation is to be is a subject which is giving rise to much anxious thought.

What is possibly an idealised form of management has been put forward by Mr. Seebohm Rowntree who has explained his views in many speeches. A very great deal of whatever friction occurs in industry is due to a feeling on the part of the employees that they have not been fairly treated, or that they have been given orders which they dislike and for which there is no justification. The general spread of education has taken us a long way past the " their's not to reason why, their's but to do and die " attitude of management to employee. The employees themselves are generally amenable to reason but they are not prepared necessarily to accept orders blindly. Mr. Rowntree has therefore put forward the view that democracy as it is applied in a modern democratic state should be applied equally in the factory.

There must of course be a board of directors and higher management. The board of directors must be appointed by the shareholders. The management must be appointed by the board of directors. In that respect the organisation of a factory

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must be somewhat different from the political set-up of a country. The responsibility for the whole concern must be, and remain, at the top. It can be argued with every justification that only those with certain training and experience are capable of handling the affairs of a great organisation. The management of the affairs of the organisation cannot be in any way the responsibility of the workers though it may be desirable to explain to them, as to the shareholders, what is the reason for certain decisions taken and the effect on the company's fortunes of those decisions. The co-partnership scheme, so largely adopted in the gas and other industries, would automatically bring these explanations as shareholders to employees who hold shares, and through them to non-share-holding employees.

The internal management of the factory, however, is quite another matter. The management in the past has made rules to govern internal affairs. It has fixed hours of work and it has taken arbitrary action in engagement, dismissals of staff and in the making of the general regulations which govern the work of the factory. What the management has done may be completely admirable but it may not always have been acceptable to those who have been given orders because they may not have understood the need for those orders or, for other reasons, the orders may have given rise to resentment. To avoid this factory rules should be made in consultation with those who administer the rules, *i.e.*, the overseers and foremen who are the leaders of small sections of the workers. Mr. Rowntree is strongly of the opinion that while the higher officials must be appointed by the directors, these junior officials with whom the workers are constantly brought into contact, and who can make the hours spent at work happy or miserable, should always be selected in consultation with the workers themselves. A representatve of the workers in the departments concerned, usually the shop steward, should be associated with the management in the selection of an overseer.

It is not only in the making of the laws but also in their administration where difficulties arise. Mr. Rowntree suggests that in order to protect people from mal-administration of the laws there should be an impartial tribunal in the form of an appeal committee comprising two members elected by the workers, two appointed by the directors and an agreed chairman. Anyone punished in any way for a breach of the works' rules or for misconduct should have the right to appeal to this committee whose decision should be final.

Mr. Rowntree's view will savour of idealism to many employers, more particularly because of the known idiosyncracies of those who work with their hands. It will obviously be a little difficult to set up any elaborate organisation of this kind in a comparatively small firm of group 2; it may equally be difficult to set up the organisation in a very large firm in this group, but in spite of the obvious difficulties it would appear to be a useful way of inducing true co-operation between capital and labour.

NOTES AND COMMENTS

106—Not Out

THE leadership which this country has given to the world is one of those apparently unpalatable facts which internationally it is now more convenient to forget. Sometimes, however, facts speak more loudly than theories; not the least important of these are the evidences now seeing the light once more of the courage and enterprise of certain chemists and medical men in London in 1841 in forming the Chemical Society of London, which on July 14 as the Chemical Society celebrates the completion of 106 years' service to chemical science in all parts of the world. The fact that the Society is celebrating its centenary six years late is certainly not to its discredit, bearing in mind how fully and honourably most of its members were occupied in 1941; and it is not impossible that some at least of the distinguished scientists who are coming to London next week will recall that without that rallying point in 1841 and again 100 years later the free exchange of information which begins nine days hence would not have been possible. However that may be, next week's celebrations recognise that the impulse which resulted in the formation in 1841 of the first society ever created solely for the study of chemistry is not yet dead and the congregation of chemists from all parts of the world will testify once more to London's continued pre-eminence as a cultural centre which weathers all the storms.

Team Work

IN recent years one has heard a great deal about the value of team work in research. It has become an axiom as obvious as, or possibly even more so than, those of the Euclidean type with which we were quite needlessly troubled at school; for we always found it quite impossible, for example, to produce on paper a point which had no parts. With the cricket season in full swing, team work is now very much to the front in other fields besides research, but it is in the latter that such co-operative effort finds its highest application, especially in the invention of new and improved clothes-pegs which form the subject of a recent patent in which at least four patentees figure. We like to think in this connection that these four are the master minds, able to withstand the fierce glare of publicity their invention may bring on them—but that behind them there are others, the people who did the donkey work, and who merit praise for this important development, but scorn to share in the publicity or renown which must accrue. It has been said, almost *ad nauseam*, that the world makes a beaten track to the abode of him who produces a better mousetrap. It is difficult to assign the relative values of pegs and mousetraps. It is indeed a problem in advanced relativity demanding an Einstein's mathematics and before which even Euclid would have felt dizzy. Mousetraps assist in the conservation of food, although in these days of very limited cheese rations they demand in the eyes of those, like ourselves, who are very fond of cheese, a very high expenditure of that rare luxury especially if, as so often happens, the mouse takes the cheese and absent-mindedly forgets to spring the trap. On the other hand clothes-pegs, if of the new and improved type and skilfully used, are powerful aids in the preservation of our spare and scanty raiment. Our experience in this direction is indeed somewhat limited. We remember having to fight our way from the maudlin embrace of a wet sheet which we were passing when the peg gave way; presumably, the steel spring of the peg became "fatigued."

Professor Peptic: ***How do you know it's a metal?***

Harold: ***Because its hard and shiny and ends in "um."***

On another occasion when we engaged in a new form of laundry research, using soap of our own manufacture, resulting in the complete destruction of the garment owing to excess alkali, pegs were needed in very large numbers for the numerous small pieces of shirt.

Research at Home

REVERTING to the subject of foods and leaving the painful memories of corrosive soap, it is particularly cheering to find, from another recent patent, that marmalade can now be made from seaweed; and not only marmalade, but table jellies as well. This will bring added interest to our forthcoming sojourn at the seaside where, as usual, large supplies of seaweed will be available. It may, however, be necessary to bribe the landlady handsomely for permission to undertake a few experiments with seaweed in her kitchen, backed up by a promise to let her have the very first jar of marmalade produced—a just retribution. But memories of seaside landladies, however—memories which go back many years—tend to weaken any scientific hopes in this direction and to dampen the zeal of the most enterprising researcher. So far as one can remember they objected most strongly to having long strands of slimy seaweed all over the house; and it is doubtful if any of them, even the most kindly, would be pleased to have a large pan of seaweed a-boiling and a-bubbling in the kitchen. They might even object to the smell: even now we can recall the truly amazing odour which came from the botanical laboratory when students had a week with "fresh" red and brown seaweeds. Our landlady might in the end prefer to get her table jellies at the shops. Scientific investigators have to contend with many difficulties and much discouragement.

Work of Art

TRADE and technical literature seems generally to fall into one or other of two fairly well defined categories: the indispensable but unedifying sort of publica- and the more enterprising sort of publication which assumes that the client's interests are not necessarily bounded by specifications, price and trading terms. THE CHEMICAL AGE is the recipient of both sorts on a scale which would seem to controvert stories about the paper shortage, were the facts not so painfully evident to a publisher, and we are grateful when the balance is in favour of the "readable" sort. So as connoisseurs in catalogues and expert trade publication tasters we get from the current Review of Ciba, the international chemical and dyestuffs manufacturers whose headquarters are in Zurich, the sort of glow which the wine-taster probably gets when presented with a very fine vintage of exceptional rarity. All but two of the 42 decorative and absorbing pages of this review are devoted to a scholarly study in great detail of medieval dress and are ornamented with reproductions of contemporary illustrations and sculpture from roughly the ninth to fifteenth centuries preserved in priceless collections on the Continent. It may be asked: How does this promote the business interests of dyestuffs manufacturers, since all reference to the dyer's chemicals, in which Ciba are specialists, are confined to the subsidiary position which other advertisements occupy in a modern newspaper? There is, indeed, no prospect that an immediate increase in sales of Ciba products will result from this very graceful contribution to trade literature; but it is fairly certain that nearly all who receive a copy will prevent it meeting the fate which may overtake most trade booklets after a very short life and will long entertain a very cordial feeling towards Ciba for having produced something which stimulates the imagination and widens the dyer's background as no ordinary technical or trade list does.

Chilean Nitrate of Soda

The Board of Trade states that Chilean nitrate of soda, crystal and granulated, 97/98 per cent, will be sold in lots of 6 tons or more delivered carriage paid to any railway station in Great Britain up to June 30, 1948, at £18 10s. per ton of 2240 lbs. gross weight. Smaller lots delivered carriage paid will be sold at the above price plus the following surcharges: 4 tons and over, but less than 6 tons, 1s. per ton; 2 tons and over, but less than 4 tons, 5s. per ton; 1 ton and over, but less than 2 tons, 10s. per ton; 2 cwts. and over, but less than 1 ton, 20s. per ton. An allowance of 10s. per ton will be made to buyers who collect from port warehouses, in which case there will be no surcharges for lots of less than 6 tons.

Montreal Steel Plant.—Algoma Steel Corporation's plant at Montreal, it is reported, will increase its production to a million tons of steel a year by the end of 1947, thus almost doubling the 1946 figure of 550,000 tons.

CHEMICAL PLANT MANUFACTURERS

ANNUAL LUNCHEON AND MEETING

A DISTINGUISHED gathering of nearly 200 members and guests of the British Chemical Plant Manufacturers' Association were at the annual luncheon of the Association in the Great Hall of the Connaught Rooms, Great Queen Street, London, W.C.2, on Wednesday, June 25, Mr. W. R. Beswick, chairman of the B.C.P.M.A., presided.

The principal guest was Sir Henry Tizard, chairman of the Defence Research Policy Committee.

Other guests included Dr. H. J. T. Ellingham (secretary of the Royal Institute of Chemistry); Sir Charles Goodeve, director of the British Iron and Steel Research Association; Dr. L. A. Jordan, director of the Research Association of the British Paint, Colour and Varnish manufacturers; Dr. J. G. Mallock, of the National Research Council of Canada; Professor D. M. Newitt, Professor of Chemical Engineering, Imperial College; Sir William Palmer, of the British Rayon Federation; Mr. H. V. Potter, president of the Plastics Institute; Sir Archibald Rowlands, permanent secretary to the Ministry of Supply; Sir Ewart Smith, of the Advisory Council on Scientific Policy; Mr. N. Garrod Thomas, director of the National Sulphuric Acid Association; Dr. A. J. V. Underwood, chairman of the Chemical Engineering section of the XIth International Congress of Pure and Applied Chemistry; Mr. M. K. Vellodi, deputy High Commissioner for India; Professor H. Watson, Professor of Chemical Engineering at University College, London; Mr. H. W. Cremer (president) and Mr. M. B. Donald and Mr. L. O. Newton, joint honorary secretaries of the Institution of Chemical Engineers, Mr. E. H. Gilpin, chairman of the British Food Machinery Manufacturers' Association; Mr. A. J. Holden, general manager of the Association of British Chemical Manufacturers; Mr. Eric Boden, scientific liaison officer to the Union of South Africa; and Sir John Henry Woods, permanent secretary to the Board of Trade; as well as representatives of the Ministry of Labour and National Service, the India Office, the Ministry of Supply, the Federation of British Industries, the Ministry of Fuel and Power, and editors of technical journals.

After the Loyal Toast, the Chairman proposed "The Guests," with which toast he coupled the name of Sir Henry Tizard. He accepted the task as a privilege, and said the Association was indeed honoured by the wide and cordial relationships represented on that occasion.

Welcoming the representatives of Government departments, he said his words were of no idle choice when he referred to them as trusted friends with whom discussions were full and oft-times frank. They appreciated that the anxieties of the Association were directed to the development of industry.

The permanent heads of two great State departments were two very welcome guests—Sir John Henry Woods, of the Board of Trade, whose department fostered the commercial activities of industry, and Sir Archibald Rowlands, of the Ministry of Supply. It was also a privilege to welcome representatives of the Department of Overseas Trade and the Ministry of Fuel and Power, with whom the Association was in day-to-day contact.

Mr. W. R. Beswick, chairman of the B.C.P.M.A. at the luncheon.

Next, the chairman welcomed very heartily the representatives of industrial organisations with whom the B.C.P.M.A. had common purpose in smoothing the path of trade, employment and technical development, adjusting the industry to the complex conditions of the times, work which was a guarantee of that stability which everyone so much desired. Among them he mentioned specifically the great Federation of British Industries, the British Engineers' Association, the Tank Association, the Food Machinery Manufacturers, and industrial research associations, which included the British Iron and Steel Research Association (represented by Sir Charles Goodeve), and the British Non-Ferrous Metals Research Association.

There were also present representatives of the Association of British Chemical

Manufacturers and many other friends from the chemical industry. The B.C.P.M.A. was in constant touch with the chemical manufacturers' association, for they were indeed interdependent. One of the things they were trying to do was to eradicate the word "bottleneck"; and the chairman emphasised that the supply of home plant was important. He paid tribute to the statesmanlike attitude of the chemical manufacturing industry in offering to make user experience and "know-how" available for large overseas contracts, which could have a significance in national prestige.

Coupling the toast with the name of Sir Henry Tizard, the Association's principal guest—which afforded him particular pleasure—the chairman said that Sir Henry's name was associated with scientific achievement in many directions, and in the field of research, where his courageous and dynamic personality had been the means of driving many vital developments through to practical results. His was a distinguished association with university life and with Government service, both in peace and war, and he was now chairman of the Advisory Council on Scientific policy and of the Defence Research Policy Committee.

Guests Reponse

Sir Henry Tizard, responding to the toast, first returned thanks for the warm welcome extended to the guests, and particularly for the kind remarks concerning himself, which were extremely encouraging even if they were not deserved. The guests, he said, had enjoyed immensely the Association's hospitality and company.

Commenting on the chairman's reference to his appointment as a guiding hand behind the scientific policy of the country, Sir Henry said that the new Advisory Council on Scientific Policy, and all concerned with it, were determined to do what they could in the national interest. But he asked that not too much should be expected of them—at any rate at first. He doubted that they could be of any really decisive help in overcoming the short-term national difficulties, though they certainly could be of some help. They would be concerned mainly with long-term problems, helping, for instance, to improve the scientific organisation of government, studying and advising on the problem of scientific man-power, watching for shortcomings in technical developments, and generally giving help.

Sir Henry confessed that, although he had started his adult life as a chemist, he had had no idea, until he had had the pleasure of meeting the Association's chairman and director, and subsequently of reading its annual report and one of the special memoranda written for the benefit of members, of the range of its interests and work. He would like to know what countries the director had *not* visited in the course of his duties, and of what language he was too ignorant to order a dinner, or at least a drink!

We lived in difficult times, which would be far more difficult than they were if we were not enjoying the help of friends and relations overseas. Before long we should have to get along without that generous help. Whatever expedients we devised to get us over the first fences, and whatever luck we had in the race against time and circumstances, all would depend in the long run on the quality of our exports, or in other words, on the science and skill they represented. It was difficult to think of any industry which offered more scope in that respect than the chemical industry. Taking it as a whole, there must surely be more science in it, per pound of product, than in the products of other industries. Some chemicals, such as alkali, were now so common, and their manufacture so standardised, that one had almost forgotten that they represented the science of the past. For such products there was a steadily growing world demand, which we ourselves could not possibly satisfy. The best thing we could do in such circumstances was to teach other countries to make them and to export the capital plant for the purpose, and eventually to benefit, directly or indirectly, by their growing prosperity.

Annual Meeting

Sir Henry expressed thanks, on behalf of himself and his fellow guests, for the hospitality extended to them, and with full heart he wished the Association success.

After the luncheon the annual general meeting was held under the chairmanship of Mr. W. R. Beswick. In the annual report it was stated that during the year the whole supply position had deteriorated and much of the time of the Association had been occupied in consultation with the Government on the subject in an endeavour to ease the difficulties of the members.

Throughout the year the Association had been in close touch with the Association of British Chemical Manufacturers and other user organisations, as well as with their members, regarding the re-equipment of the home industries which the British chemical plant industry serves, and in particular, had devoted attention to the incidence of deliveries for home and export orders. From these discussions had developed a spirit of co-operation which it is hoped to foster still further during the coming year.

As was foreshadowed in the last annual report and following representations made to the Government by the B.C.P.M.A., the Institution of Chemical Engineers, the Institute of Petroleum, and the Association of British Chemical Manufacturers, the Ministries of Labour and Education have estab-

lished centres at Battersea Polytechnic, the South-West Essex Technical College and Loughborough College, at which selected candidates from the forces and from industry are given a minimum of one year's intensive training in chemical engineering; a fourth course is shortly to be instituted at Bradford Technical College. Candidates for these courses are interviewed by a joint selection panel, on which the B.C.P.M.A. is represented by Mr. W. R. Beswick, Mr. C. M. Auty and the secretary. Successful students will be excused from all excepting the home paper of the examination for the associate membership of the Institution of Chemical Engineers. These arrangements, it is hoped, will lead to the recruitment of a considerable number of newly trained entrants to the industry.

The Association had also arranged for members to meet representatives of the educational institutions concerned to discuss the supply of chemical engineering laboratory equipment for the courses.

To provide an opportunity for the chairman, officers and headquarters' staff to meet members in the provinces the first of a series of regional meetings was held in Sheffield on January 15, 1947, when opportunity was taken to entertain regional government officials who also attended a discussion on the stainless steel supply situation which was followed by a visit to the works of Messrs. Firth Vickers Stainless Steels, Ltd. A further regional meeting was held in Bristol on February 13, 1947, and it was hoped to hold the next meeting in Manchester in the autumn.

Throughout the year the executive committee had given special attention to the expansion of the industry's exports and the director had devoted a large proportion of his time to this aspect of the Association's affairs.

The urgent necessity for increasing our exports to the hard currency countries had influenced the executive committee to consider the possibility of arranging for a strong Chemical Engineering Mission to visit Latin America in the near future; if this proves impracticable it is proposed that the director visits these countries as a preliminary to sending a fully representative mission towards the end of 1948.

The proposal to establish a branch of the Association in India has been deferred. The director visited the following countries during the year: India, South Africa, Iceland, Poland, and Germany. A report on the director's visit to Germany will be circulated shortly.

In the course of the year over 1000 overseas inquiries were handled by the office and the fortnightly bulletin was used for giving particulars of those inquiries that could not conveniently be dealt with by communications to individual members.

Mr. H. S. Cheetham (Humphreys & Glasgow, Ltd.), and Dr. E. C. R. Spooner (Sutcliffe Speakman & Co., Ltd.) did not seek re-election to the council. Mr. J. Duncan Campbell and Dr. R. Lessing were elected in their stead. The officers of the Association and members of council are: chairman, Mr. W. R. Beswick (Ashmore, Benson Pease & Co., Ltd.); vice-chairmen: Major V. F. Gloag (Simon-Carves, Ltd.), Mr. A. G. Grant (Whessoe Limited), Mr. B. N. Reavell (Kestner Evaporator & Eng. Co., Ltd.), hon. treasurer, Mr. H. V. Yorke (Bennett, Sons & Shears, Ltd.).

Other members of council: Mr. G. W. Allott (Newton, Chambers & Co., Ltd.), *Mr. B. L. Broadbent (Thos. Broadbent & Sons, Ltd.), *Mr. J. Duncan Campbell (London Aluminium Co., Ltd.), *Dr. G. E. Foxwell, Mr. E. S. Franklin (Torrance & Sons, Ltd.), *Mr. K. Fraser (W. J. Fraser & Co., Ltd.), Mr. J. C. Haithwaite (John Thompson (Dudley), Ltd.), Mr. G. N. Hodson (Hathernware, Ltd.), Mr. W. J. Hooton (S. H. Johnson & Co., Ltd.), *Dr. R. Lessing (Hydronyl Syndicate, Ltd.), *Mr. J. H. G. Monypenny (Brown Bayley's Steel Works, Ltd.), Mr. S. J. Ralph (Aluminium Plant & Vessel Co., Ltd.), *Mr. J. Arthur Reavell (Kestner Evaporator & Eng. Co., Ltd.), Mr. G. W. Riley (Geo. Scott & Son (London), Ltd.), *Dr. R. Seligman (Aluminium Plant & Vessel Co., Ltd.), Mr. S. G. Watson (W. C. Holmes & Co., Ltd.), Mr. W. Wood (International Electrolytic Plant Co., Ltd.), *Mr. J. W. Wright (Cannon Iron Foundries, Ltd.). *Past chairmen of the Association.

Mr. Norman Neville, O.B.E. (director), Dr. E. H. T. Hoblyn, M.B.E. (secretary).

Next Week's Events

MONDAY, JULY 7, to SATURDAY, JULY 12

Royal Institute of Chemistry. St. Andrew's University. "A Symposium on Coal, Petroleum and their Derivatives."

TUESDAY, JULY 8

Parliamentary and Scientific Committee. Committee Room 12, House of Commons, 5 p.m. General committee meeting. Mr. J. E. L. Bailey and Mr. J. Davidson Pratt: "The Future of the Scientific Instrument Industry in this Country with reference to Competition from Germany."

THURSDAY, JULY 10, to SATURDAY, JULY 12

Institute of Physics (Manchester Branch). Manchester University. Summer Conference.

CENTENARY CELEBRATIONS

DETAILED PROGRAMME OF EVENTS

THE Chemical Society has now issued in detail the programme which it has drawn up for the celebration in London, July 14-17, of its completion of 100 years' service to chemical science. The Society is, in fact, 106 years old, but war conditions prevented the celebration of the actual centenary in 1941.

The honour of delivering the Faraday Lecture—the concluding event of the three days' celebrations—has been conferred on Prof. Sir Robert Robinson, president of the Royal Society, and the Prime Minister will be the guest of honour at the centenary dinner. The Government will act as host at a luncheon to overseas visitors and at a garden party for Fellows.

The principal events in the three-day programme are as follow.

Monday, July 14.—09.30 : PREVIEW of the Centenary Exhibition. 11.00 : OPENING OF THE CENTENARY EXHIBITION by the President of the Society, Prof. C. N. Hinshelwood (in the chair, Mr. G. Tomlinson, Minister of Education), at the Science Museum, South Kensington, S.W.7.

Tuesday, July 15.—09.45 : RECEPTION of delegates and distinguished visitors by the President and Council, at Central Hall, Westminster. 11.00 : OPENING CEREMONY OF THE CELEBRATIONS ; address of welcome by the President ; presentation of addresses by distinguished visitors. 03.30 : CENTENARY ADDRESS by the President of the Society at Central Hall, Westminster.

Wednesday, July 16.—11.00 : LECTURES—(1) "Chemical Personalities a Century Ago," by Prof. J. Read, at the Institution of Civil Engineers, Great George Street, S.W.1 ; (2) "The Work of the Royal Institution in Physical Chemistry in Great Britain," by Prof. E. K. Rideal, at the Royal Institution, Albemarle Street, W.1. 03.00 : (3) THE FARADAY LECTURE, by Sir Robert Robinson, followed by presentation of Faraday Medal to the lecturer, at the Central Hall, Westminster.

CHEMICAL CONGRESS PROGRAMME

Wednesday, July 16.—16.00 : Registration of members at South Kensington. 21.30 : Informal reception at Dorchester Hotel.

Thursday, July 17.—10.30 : Opening ceremony by President of Congress, and opening of XIth Conference de l'Union Internationale de Chimie by the President, at the Central Hall, Westminster. 12.45 : Subscription lunch at Holborn Restaurant. 12.45 : Subscription lunch at Connaught Rooms. 14.30 : Congress lecture by Prof. L. Pauling at the Royal Institution. 15.30 : Garden party by H.M. Government at Lancaster House, S.W.1. ; reception by Mr. Herbert Morrison (Lord President of the Council). 18.00 : Reception by the Royal Institution ; reception by Lord Rayleigh. 21.00 : Reception by the Royal Society and Sir Robert Robinson in Burlington House.

Friday, July 18.—09.00 : Meetings of Sections 1-14 at South Kensington ; meeting of Bureau et Comité d'Action, conference, at Burlington House. 10.15 : Réunion de l'Assemblee Général, conference, at Burlington House. 10.00 : Visit to Kensington Palace and the Victoria and Albert Museum. 11.15 : Réunion de Conseil, conference, at Burlington House. 12.45 : Luncheon by the Society of Chemical Industry at the Mayfair Hotel. 14.30 : Congress lecture by Sir Henry Dale, at London School of Hygiene and Tropical Medicine, Keppel Street, W.C. ; visit to Messrs. J. Lyons' laboratories, Hammersmith Road ; visit to the research laboratories, General Electric Company, Wembley ; visit to Messrs. Phillips' Lamps' laboratories, Mitcham. 15.00 : Ladies' fashion display and tea at the Dorchester Hotel ; 15.30 : First Congress meeting on Abstracting Literature and Documentation. 17.00 : Réunion des Commissions, conference, at Burlington House. 19.00 : Visit to Adelphi Theatre (" Bless the Bride ") ; concert by Jacques String Orchestra at Conway Hall, Red Lion Square, W.C.1. 19.30 : Invitation dinner given by Lord Leverhulme, President of the Congress, at the Apothecaries' Hall.

Saturday, July 19.—09.00 : Meetings of Sections 1-14 at South Kensington ; Réunion des Commissions, conference, at Burlington House. 10.00 : Day tour by motor coach to Cambridge ; day tour by motor coach to Windsor. 14.30 : Tour of the bombed area of the City and East End and Dockland ; tour of the West End, Westminster Abbey, Houses of Parliament and the Wallace Collection. 15.00 : Display by the National Fire Service, at Lambeth. 19.30 : Buffet dance by subscription at Grosvenor House. 20.00 : Subscription dinner at the Dorchester Hotel.

Sunday, July 20.—10.00 : Day tour by motor coach to Oxford via the Thames Valley ; day tour in Kent, including Canterbury, Sevenoaks and Maidstone ; day tour in Buckinghamshire, including Whipsnade Zoo. 11.00 : Religious services.

Monday, July 21.—09.00 : Meetings of Sections 1-14 at South Kensington ; Réunion des Commissions, conference, at Burlington House. 10.00 : Ladies' shopping parties. 11.30 : Réunion de l'Assemblee Générale, conference, at Burlington House. 12.45 : Invitation luncheon by the Salters' Company in the Ironmongers' Company's Hall. 14.15 : Visit to Messrs. Beechams' laboratories, Brockham Park, Dorking. 14.30 : Congress lecture by Prof. P. Karrer at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C. ; visit to the Royal Botanic Gardens, Kew. 15.30 : Congress lecture by Prof. A. Tiselius at the London School of Hygiene and Tropical Medicine, Keppel Street, W.C. 17.00 : Visit to the European Service Studios of the B.B.C., Bush House, Aldwych ; reception by the Society for Visiting Scientists at 5, Burlington Street, W.1. 21.00 : Reception by the President of the Congress and the Lord Mayor of London at the Guildhall.

Tuesday, July 22.—09.00 : Meetings of Sections 1-14 at South Kensington ; Réunion des Commissions, conference, at Burlington House. 10.00 : Visit to the Dairy Research Institute, Shinfield, nr. Reading ; visit to Messrs. British Drug Houses Laboratories, Poole, Dorset. 12.45 : Luncheon by Imperial Chemical Industries, Ltd., at the Dorchester Hotel ; ladies' subscription lunch at the Connaught Rooms. 14.30 : Congress lecture by Prof. L. Hackspill, Membre de l'Institut, at the Royal Institution, Albemarle Street. 14.45 : Sightseeing tour of City, St. Paul's Cathedral, Tower of London and the Guildhall ; tour of Surrey (Reigate and Dorking) ; visit to Messrs. Tate & Lyle's Laboratories, Silvertown ; visit to Messrs. High Duty Alloys' laboratories, Slough ; visit to Messrs. J. Lyons' laboratories, Hammersmith Road. 15.30 : Second Congress meeting on Abstracting Literature and Documentation. 16.30 : Invitation tea party by Mrs. Eric Rideal at the Royal Institute, Albemarle Street, W.1. ; invitation tea party by the English Speaking Union at Dartmouth House, London, W.1. 20.30 : Reception by the Royal Institution of Chemistry and Dr. E. Roche Lynch at Grosvenor House.

(*continued on page* 12)

Paint Statistics for May

The Paint Advisory Committee of the Board of Trade has issued the following statistics in respect of the May, 1947 distribution of linseed oil, lithopone, titanium dioxide, and drying oils:—

Linseed Oil.

	Tons	Tons
Ad hoc allocations		
Ancillary uses	20	
Crown Agents	30	
Exports under M.O.S.E.S.	125	
Reserve	20	
Retail sales under Building Maintenance Scheme	100	
White lead paste	125	
		420
General distribution total ...		3,576
Total		3,996

Lithopone.

Paint	2,333	
Special releases	177	
M.O.S.E.S.	156	
		2,666
Non-paint	612	
Direct export	15	
		627
Total		3,293

Titanium Dioxide.

Paint	426	
Special releases	73	
M.O.S.E.S.	47	
		546
Non-paint		244
Total		790

Tung Oil.

	Tons	Cwts.	Total Tons	Total Cwts.
Paint	227	18		
Non-paint	38	5		
			266	3

Dehydrated Castor Oil.

Paint	125	10½		
Non-paint	111	12		
			237	2½

Oiticica Oil.

Paint	1	10		
Non-paint	1	8		
			2	18

Stillingia Oil.

Paint	446	2½		
Non-paint	11	0		
			457	2½

LESS COAL IN JUNE

A SUBSTANTIAL reduction in the amount of deep-mined coal produced in the first two weeks in June is a disturbing feature of the summary which the Ministry of Fuel issued last week. The reduction is in comparison with the relatively high output in May. Total output of saleable deep-mined coal in the week ended June 7 was 3,660,600 tons, and in the following week it was 3,691,200 tons. In the previous two full five-day weeks, May 17 and 24 (May 31 was Whitsun week) the figures were 3,844,100 tons and 3,802,300 tons, respectively. A steady increase is shown in the smaller output of opencast coal for which the figures are: May 17, 209,500 tons; May 24, 227,000; May 31, 159,600; June 7, 212,000; June 14, 233,500 (provisional).

The weekly average loss of coal through holidays, disputes, accidents and transport difficulties was 305,100 tons. Voluntary absenteeism among coal-face workers was halved in the five-day weeks in May, averaging 4.65 per cent, as compared with 10.91 per cent in April. Average output per man-shift was 2.88 tons, compared with 2.77 tons in April.

Two Penicillin Awards

The Royal Society of Medicine has departed from its normal custom of presenting one Gold Medal by awarding one to Sir Alexander Fleming and another to Sir Howard Florey for their co-development of penicillin.

BULK BUYING ATTACKED

REPRESENTATIONS about rising prices in industry, notably in the cost of raw materials, are being made to the Association of Chambers of Commerce by the Birmingham Chamber. At a meeting of the Birmingham body last week Mr. Walter Higgs quoted the increased prices of various metals, including copper, from £63 to £132 per ton, and said that when the present sellers' market was replaced by a buyers' market, manufacturers would be in serious difficulties. He attributed the increases largely to bulk purchasing, a "very inefficient way" of buying overseas, and pointed out that manufacturers were unable to quote firm prices for export owing to continued advances in the price of raw materials. Several instances had been reported to the Chamber where overseas customers had, for this reason, refused to place orders.

Explosion at Chemical Factory

Five persons were injured and four were removed to hospital as the result of an explosion in part of the distillation plant of the W. J. Bush & Co., Ltd. chemical factory at Mitcham on Tuesday. It is understood their injuries were not very serious. The company stated next day that despite the apparent violence of the explosion only a small part of the factory was affected: elsewhere work continued as before, and the damage would be repaired in a week or so.

Synthetic Iron Oxide Pigments*

EACH year thousands of waste iron salt solutions from U.S. steel mills and titanium oxide plants are neutralised and pumped into streams. One small steel plant has to dispose of an iron oxide equivalent of over 125 tons per day. This iron oxide in the form of ferrous sulphate is dissolved in about 125,000 gallons of acidulated water. The proper neutralisation of such waste acid-ferrous sulphate solutions requires much time, labour, and money. Owing to critical stream pollution by chemical wastes, great care has become necessary in the disposal of waste pickle-liquor from the steel mills and titanium oxide plants.

For many years a certain amount of this iron salt solution has been converted to copperas, and ferrous sulphate, by evaporation and crystallisation processes. From these purified solutions iron oxide paint pigments and polishing rouge are made.

Another use of the pure iron oxides resulting from iron pickle liquor that has not received the attention it deserves is the preparation of metallic iron powder from which many useful objects may be made through compression in moulds, sintering in a reducing atmosphere, followed by coin pressing. The full utilisation of this scheme of manufacturing iron parts awaits only the methods of preparation of pure iron oxides at a reasonable cost.

While the synthetic iron oxide pigment industry is one of the oldest U.S. industries, by virtue of its age it is one of the most conservative. The chemical engineers, perhaps on account of its relative size, have neglected the potential importance of the methods used within the industry. It is believed that while these methods are producing good results, there is much room for improvement. For instance, certain of these operations could be streamlined and made continuous instead of batchwise as at present, thus leading the way to an economic use of larger portions of the now valueless pickle liquor.

There is another useful application for finely divided iron oxide. In the ever widening search for petroleum it will become necessary to drill many more and deeper wells involving the use of drilling mud having an apparent density of from nine to twelve or more lb. per gallon. One of the faults of the earlier use of iron oxide for this purpose is that it hydrates readily and plugs up rock structures. However, this drawback can be overcome in several ways.

In another, and completely different sphere this very quality of hydration and sticking to rock structures had a great advantage. Cement blocks can be coloured red, brown, yellow, or blue-grey by appropriately prepared iron oxide. A mixture of such a material not only gives desirable colours but also improves the water proofing qualities of the blocks.

* From a paper read by C. C. DeWitt before a meeting of the American Institute of Chemical Engineers at St. Louis, Missouri, May 1947.

U.S. Gas and Coke Decline

PRODUCTION of retort coke in the United States in 1946 totalled 753,335 net tons, according to producers' reports received by the Bureau of Mines of the United States Department of the Interior, which reported that in the coal-chemical field a total of 17,464,392 gallons of tar were produced in 1946 and 1,259,469 lb. of ammonium liquor (NH_3 content).

The production of 753,335 tons of retort coke represented a decrease of more than 12 per cent from the 1945 output and continued the downward trend that started in the early twenties. The manufacture of retort coke, dependent on the production of coal gas, declined in recent years principally because of the substitution of water gas, natural gas, or liquefied petroleum gases for coal gas at a number of installations. Conversions were curtailed temporarily during the war years because of shortages of labour and materials but a definite acceleration in conversions was noted in 1946 with one plant changing from the manufacture of coal gas to water gas, four plants to natural gas, and 11 plants to propane-air gas. A total of 174 retorts having an annual coal-carbonising capacity of 57,000 net tons were reported as being abandoned in 1946, and at the end of the year only 1787 retorts were in operation of the 2148 reported in existence. The annual coal-carbonising capacity of all retorts or ovens in existence on December 31, 1946, totalled 1,608,500 net tons and the rate of operation for the year was 77 per cent of the carbonising capacity, according to the Bureau of Mines.

The decline in retort-coke production was accompanied by a decline of 12 per cent in the output of crude tar. The yield of crude coal tar per ton of coal carbonised also dropped from 14.11 gallons in 1945 to 14.08. The recovery of ammonia from coal-gas retorts in the form of ammonia liquor which was practised at 100 plants producing 14,500,000 lb. of ammonia in 1920 has steadily declined and in 1946 only 1,259,469 lb. were produced at four plants.

A River of Chemicals

New Uses for Wood Pulp By-Products

THE problem children of industry are the waste products which result from manufacturing processes. Gradually the applied science of the industrial laboratory is putting these unmanageable offspring to work—observes *C-I-L Oval*, the journal of Canadian Industries, Ltd., introducing an up-to-date review of the large and increasing range of industrial uses now being found for the waste liquor resulting from the chemical production of wood-pulp.

The by-product of this vast Canadian industry at one time " went down the drain." Now it is the raw material for a dozen valuable manufactured products and the range has certainly not yet been exhausted.

For every three cords of wood which entered the cooking digesters of the pulp and paper industry to be converted into chemical pulp by the sulphite process, about eight tons of liquids and solids such as sugars, lime, lignin, acetic acid and sulphur, together with the cooking chemicals, were formerly washed away. This does not apply, of course, to the mechanical pulp process, which accounts for two-thirds of all the pulp made in Canada, since by this process, virtually all the wood is converted into pulp.

Digested Products

In the chemical process the log is reduced to its component chemicals in large digesters in which it is cooked in an acid solution for six to 12 hours under pressure at around 135-145° C. The solution is of magnesium or calcium bisulphite in sulphurous acid, which releases from the wood about 50 per cent of recoverable cellulose and the large content of lignin, which binds the fibres together. Sugars, resins and fats are also released.

The cooking liquor dissolves virtually all the components in the wood save the cellulose which emerges as pulp having a weight around 48 per cent of the original wood. The residue from the cooking process is shown in the following typical analysis, given in grams per litre:

Total solids	120.25
Residue on ignition ...	19.45
Total sulphur	10.95
Calcium	5.34
Lignin	61.90
Hexoses	17.50
Pentoses	2.32
Furfural	0.26
Acetone	0.13
Ethanol	0.18
Methanol	1.03
Acetic acid	4.70
Formic acid	0.93

One of the earliest uses of the sulphite liquor was as a soil stabiliser, in which it was comparable to calcium chloride, and it did good service in the war for aircraft runways, which remained firm even after heavy rains. Some of the liquor is still being concentrated to 50 per cent solids and sold for road surfacing and as a binder for sand moulds, linoleum and fuel briquettes.

Source of Alcohol

The war stimulated one of the more important uses of the liquor—as a source of fermentable liquors and hence of alcohol for fuel and synthetic rubber production. When the need arises, the Canadian pulp and paper industry, with a potential production capacity of 30 million gallons of industrial alcohol a year, will be able to take care of domestic demand and perhaps serve the export market.

In Canada two plants are making yeast from sulphite liquor, but the potential capacity for producing yeast is so great that one fair-sized sulphite mill could supply the whole Dominion. Another contribution to foodstuffs is vanillin, the essential aromatic of vanilla, of which the two mills in Canada and the U.S.A. could, if necessary, step up production to vast proportions.

The production of celluloid, the first plastic, from cellulose nitrated with a mixture of nitric and sulphuric acid and plasticising with ether-alcohol and camphor dates from the latter half of the nineteenth century. Now the lignin, nature's own plastic cement is likely to be a more economical source of plastics. Wartime research by the Howard Smith Paper Mills at the request of the Canadian Government produced a method to isolate lignin in a relatively pure form from the waste liquors of the alkaline pulping process. The lignin is produced as a fine brown powder. This is mixed with kraft pulp of other pulp making fibres in a papermakers' beater, and then run over a conventional papermaking machine. The retention of the lignin is some 40-45 per cent.

Lignin Impregnation

The lignin-enriched paper is then made up into piles, placed between polished steel plates and inserted in a hydraulic press where it is subjected to a pressure of 800 lb. per sq. in., and heated to around 160° C. The heat and pressure cause the lignin to melt. On cooling the individual sheets are found to be fused into a single, homogeneous sheet material having great impact strength and impervious to mild alkalis, acids, alcohols and ordinary

solvents and having high di-electric properties.

A war-time development in England was the use of sulphite liquor as a source of glycerine, needed in the manufacture of explosives. Using the proper strain of yeast, yields of glycerine up to 35 per cent of the weight of the sugar were obtained. Toluene was produced in Germany by the hydrogenation of sulphite liquor.

The presence of sugar in the liquor promoted its successful use in Europe to relieve the protein scarcity and in Germany protein from sulphite liquor even served as a meat substitute. A more promising experiment is the production of an elastic substance with properties similar to rubber by treating sulphite liquor with hydrogen peroxide and recovering the precipitate, which is hydrolysed and polymerised.

All these uses, however, by no means exhaust the potentialities of this versatile by-product, of which its suitability as fuel is not the least. In localities where coal is costly the concentrated liquor, the organic materials of which have a fuel value of 8500 B.Th.U., is used for fuel. One mill in the United States and at least one in Canada are to use a magnesium instead of calcium base cooking acid and the concentrated sulphite liquor will be burned in furnaces in order to reduce coal consumption and to recover the chemicals.

In Canada alone, almost 1,500,000 tons of solids of various kinds from sulphite liquor are available annually. Although a large number of products can be produced from this river of chemicals, the problem now is to produce them at an economic cost. The outlook is bright, and developments are expected.

KODAK RESEARCH

In the course of an address to a meeting of the Royal Society at Burlington House, Piccadilly, on July 3, Dr. C. E. K. Mees, vice-president and director of research of Eastman Kodak research organisation, referred to his company's "sensitising dyes," which he explained had been successfully developed as a result of the research organisation's activities. He strongly advocated scientists being allowed to develop their work according to their own ideas, citing as an instance of success in that respect the experiments on the distillation of animal oils under high vacuums, which eventually led to the production of Vitamin A from shark's liver.

Dr. C. E. K. Mees

H.R.H. PRINCESS ELIZABETH was formally admitted to membership of the Royal Society on Thursday this week.

ANGAUR PHOSPHATE

Deposits of phosphate rock on the Island of Angaur (300 miles north of New Guinea) which are now being worked by the Japanese on authority from General MacArthur, have been made a subject of protest by the Government of Australia, which feels that the decision to allow operations to begin ought not to have been taken without consultation with the other allied Powers. A spokesman of the British Foreign Office is understood to have made a statement in support of the Commonwealth Government.

By way of answer to these representations, Allied Headquarters in Tokio have now issued a statement to the effect that the Angaur project in no way concerns the British or Commonwealth Governments since the island was captured by U.S. Forces and is under U.S. Control. The statement adds that there is no question as to the propriety of the United States using this to help Japan.

(*continued from page 8*)

Wednesday, July 23.—09.00 : Meetings of Sections 1-14 at South Kensington; final Réunion de Conseil (Elections) conference, at Burlington House. 09.15 : Day visit to the Plastics Division of Imperial Chemical Industries, Ltd., at Welwyn, Herts. 09.30 : Visit to Royal Horticultural Society's Gardens, Wisley, Surrey. 14.00 : Congress lecture by Prof. B. C. T. Jansen at the London School of Hygiene and Tropical Medicine. 15.14 : Visit to Rothamsted Experimental Station, Harpenden, Herts.; visit to Messrs. Roche Products' laboratories, Welwyn, Herts. ; visit to Paint Research Station, Teddington, Middlesex ; visit to Messrs. Metal Box, Acton ; visit to Messrs. Glaxo's laboratories, Greenford, Middlesex ; visit to Messrs. J. Lyons' laboratories, Hammersmith Road, W.14. 14.30 : Sightseeing tour of London (British Museum, National Gallery and the Temple). 15.00 : Meetings of Sections 1-14 at South Kensington. 15.30 : Réunion de Bureau de 1947-51, conference, at Burlington House. 19.30 : Gala dinner at Dorchester Hotel ; buffet and dance at Grosvenor House.

Thursday, July 24.—10.30 : Closing session of the congress ; lecture by Sir Robert Robinson, President of the Royal Society, at the Central Hall, Westminster.

Glass in the Laboratory—III

Draughtsmanship in Laboratory Glassware

by I. C. P. SMITH, B.Sc., F.R.I.C.

IF the average chemist is asked to sit down and make a drawing of a piece of his apparatus, he will either decline and say that he is no artist, or else he will make a drawing from which several important details are omitted. If he is asked to draw a familiar apparatus such as a Soxhlet extractor from memory, giving essential dimensions, the result would in most cases be unrecognisable; he will add, however, in all confidence, that the glass-blower would know what to make.

To many chemists the knowledge of apparatus is a prime essential to his craft, and it is in this matter of drawing, where the training of a chemist differs so greatly from that of an engineer. The latter, no matter what his particular field of work, always includes machine drawing as a part of his curriculum, and it is found that it is by no means necessary for a person to be an "artist" in order to exhibit ability in draughtsmanship.

Useful Training

When certain simple principles in drawing an article are laid down and followed, the art side of the question is found to look after itself, and anyone who can use the simple implements of the draughtsman can make a sound working representation of a given article. In this respect it is usually found that a draughtsman trained on the engineering side will very quickly be able to take up glassware drawing owing to his analytical approach to the subject. He soon understands the way one tube joins into another, in short "the way it is made." The chemist who can make a good working drawing of a required apparatus is at a great advantage, because glass-blowers are not infallible in knowing what to make from a rough sketch; moreover many glass-blowing shops themselves lack proper drawing facilities; and for the apparatus they make, they frequently rely on old patterns which they copy.

In approaching the study of apparatus drawing the chemist has generally a simpler problem than the engineer, as in the majority of instances an elevation employing a single line to represent the glass wall is adequate to depict an apparatus, instead of the plan, elevation, and end view and all the consequent codes of practice required by the engineer. The drawings of standard glass apparatus now being prepared by the Technical Committee of the British Laboratory Ware Association are excellent examples of glassware drawing; specimens of these are shown in Figs. 1 and 2C. They employ the thick line which represents the thickness of the glass in section as being the simplest and the boldest method for use in works. The significance of the line thickness is somewhat lost in these necessarily small reproductions of the originals.

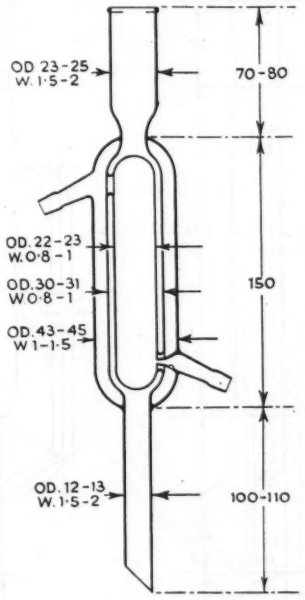


Fig. 1.

For most purposes, as remarked above, a thin line representing the outside surface of the glass only is adequate, and requires much less skill in the drawing than the broad ink line in the B.L.W.A. drawings; moreover, it "looks right." The line represents the glass tubing of average wall thickness from which most apparatus is constructed. The stage reached in Fig. 2B approximately conforms to this style. It is, however, habitual to emphasise capillary tubing by drawing its inside wall, preferably as a full line, not a dotted line, as the bore is actually seen.

For the benefit of those who have no experience in draughtsmanship, Figs. 2A, B, and C, show the stages in constructing one of the B.L.W.A. drawings, putting in the

dimensions as they are taken and employed in making the drawing. In the final drawing, joins have been given the shapes they assume in the blow-pipe, and the necessary dimension lines are added with tolerances for length, diameter and wall thickness, the last two being such as are necessary in selecting glass tubing; and it is on these points in particular where considerable care and thought must be exercised by the person making the drawing both in order to obtain a good article and for the benefit of the glass-blower.

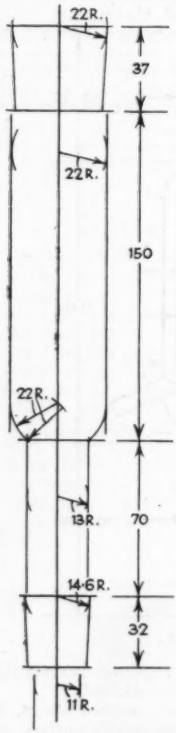


Fig. 2A.

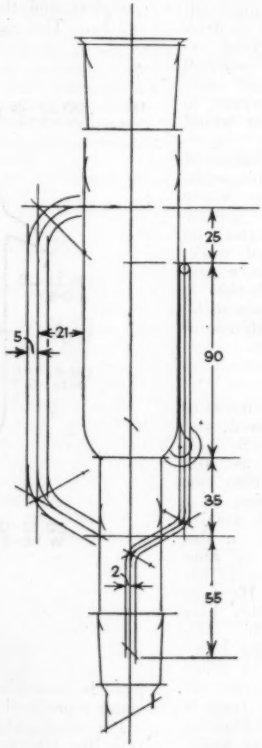
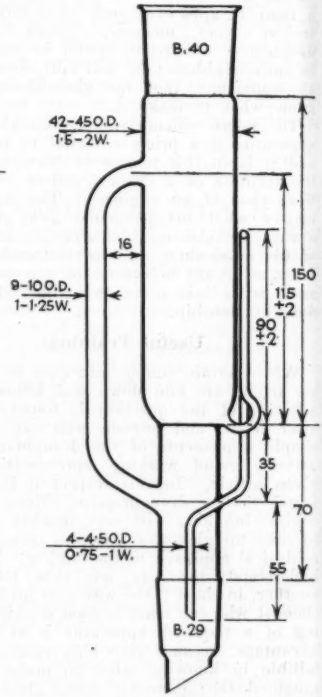


Fig. 2B.



[Fig. 2C.

Glass tubing is normally purchased by outside diameter and wall thickness, and these dimensions should be employed and given wherever possible. When an inside diameter is the more important, then this is clearly indicated. In all the drawings depicted here, outside diameters are shown by outside arrows, and inside diameters by inside arrows, but the dimensions are also clearly marked OD or ID respectively. Where a diameter is given without indicating whether it is outside or inside, it is a convention to assume that the outside diameter is required. Except in capillary tubing it is not good practice to give both outside and inside diameters, unless absolutely essential for a particular apparatus, as tolerances must be given on each dimension, and these may work against one another, *i.e.*, plus one one dimension and minus on the other, or *vice versa*, giving in one case an over-thick wall, in the other an over-thin wall, both falling within the tolerances, but not making the apparatus required. Either inside or outside diameter together with wall thickness, both with tolerances, however, adequately look after this point. It should be emphasised that in drawing a graduated tube, the scale length for a given capacity indicates the inside diameter; hence only wall thickness is required in addition. Capillary tubing is generally handled primarily by bore size, on which fairly close tolerances may be given.

eg., 1-1½ mm.; 1½-2 mm.; secondarily on external diameter where a larger tolerance is required, *e.g.*, 5-6 mm., 6-7 mm.

Close Tolerances

When a close tolerance for a single apparatus is definitely required, tubing may be selected accordingly—when stocks are adequate—but the larger the number of a particular apparatus likely to be required, the larger should be the tolerances allowed on the component parts. The amount of these tolerances is a matter of considerable knowledge and experience, but generally in small sizes ±½ mm. is allowed on diameter, and in larger sizes, say, ±1 mm., 25 mm.-50 mm., ±1 mm. to ±2 mm. over 50 mm. Wall thickness of tubing as purchased goes in stages, 0.5 to 0.7 mm., 0.8 to 1.0 mm., 1.0 to 1.25 mm., 1.25 to 1.5 mm., 1.5 to 2.0 mm. when in soda glass, but with fewer stages in the resistance glasses. When a small number of an apparatus is required and a close tolerance is necessary, these figures may be halved. For very close figures on internal diameter as in a viscometer or flowmeter, or a fractionating column with internal fitting parts, the possibility of using precision bore tubing should be examined.

Length tolerances depend largely on the glassblower, remembering that the measurements must be made rapidly on hot glass; frequently, and here is where a good drawing helps, the article is laid over the drawing and positions of side tubes, angles, etc. marked off or matched, without any other measurements being made with a ruler. On the drawings shown many figures are given ±2 mm. or ±3 mm. and these are so required in the apparatus and are known by experience to be acceptable. Other dimensions are given with no tolerance figures and these by convention are made to the "nearest convenient."

Dimensions in mm.

All dimensions whether length, diameter, or wall thickness, it will be noticed are given in millimeters. All tubing is purchased now in mm. sizes; inches or any other unit are seldom used in any official specification of glassware. Millimeters are extremely convenient for all purposes, and lead to no errors. An engineering draughtsman of the writer's acquaintance, having struggled with inches, sixteenths, thirty-seconds, sixty-fourths, and thousandths till he was 70 years old, welcomed the change to millimeters for glassware and never wanted to see an inch measure again.

Standard ground joints should be drawn in carefully, and allowance made, particularly in the sockets, for a wall thickness of 1½-2 mm. It is useful to make a small set-square from a piece of celluloid with an angle of 3° to draw the papers. In the sockets it is noticed that the glass wall must expand from the small end, to give clearance for the tip of the cone, and incidentally for the grinding tools.

When a working drawing of an unfamiliar apparatus is required in some detail, particularly of one having a number of internal surfaces, a drawing in engineering style, showing the apparatus in section with outside and inside surfaces of all parts as separate thin lines is best. Such a drawing takes little extra time to execute once it is on the drawing board, and it leaves no doubt as to the sizes of tubing employed and of the spaces between these tubes.

An example in this style, but omitting the dimension lines is shown in Fig. 3. This is

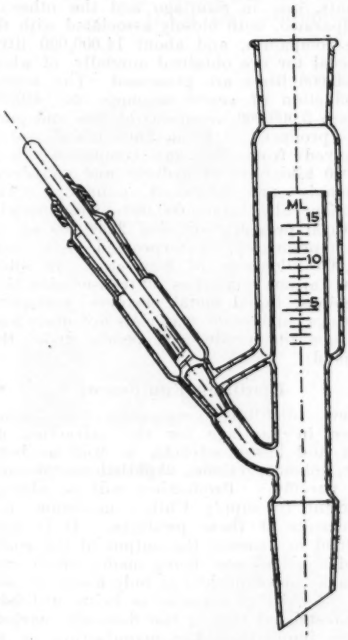


Fig. 3. Drawing of a Reflux Meter for use with an experimental fractionating column.

a proposed design for a reflux meter for use with a fractionating column. It employs the full bore for the vapour tube advocated by Birch, Gripp, and Mathan[1], but overcomes the intermittent boiling difficulty by employing an outside valve arrangement. This

[1] *J.S.C.I.* Feb. 1947, p.33.

valve is sealed by the refluxing liquid, but the vacuum seal is completed in a cooler region.

Lastly, a word to chemists; a small drawing board, a T-square, a couple of set squares and a ruler and compass are extremely handy when drawing up an apparatus and will well repay a little practice. Alternatively, small blocks of tracing paper may be purchased from most stationers, having sectional guide cards in ¼ in. and 1/10 in. squares. Unfortunately, they are not available in millimeters. These guide cards are, however, a great help in sketching either small apparatus in full size or larger apparatus in half size, and the millimeter sizes can be added later. Moreover it is possible to make and keep a carbon copy by going over the drawing a second time.

CHILEAN COAL-TAR PRODUCTS
A Recent Survey

A recent survey of the coal-tar products industry of Chile reveals that the *Sociedad Quimica Nacional* (Soquina) produces 95 per cent of the nation's output of coal-tar chemicals. The company has two plants, one in Santiago and the other in Valparaiso, both closely associated with the gas companies, and about 14,000,000 litres of coal tar are obtained annually, of which 6,000,000 litres are processed. The annual production of cresol amounts to 450,000 litres; 5,000,000 kilograms of tars and pitch are produced. From ammoniacal waters received from the gas companies about 80,000 kilograms of hydrous and anhydrous ammonia are produced annually. The company also makes 600,000 litres annually of wood preservatives and 2,000,000 sq. ft. of impregnated, waterproofed felt, and 100,000 kilograms of floor wax. In addition, various quantities of transmission belt dressings, liquid metal cleaners, protective coatings and other materials are made and the quantity produced depends upon the demand.

Distilling Equipment

New distilling equipment is being added in Santiago for the extraction of light and heavy solvents, as well as benzene, toluene, xylene, naphthalene, phenol, and paraffin. Production will be almost sufficient to supply Chile's minimum requirements of these products. It is also planned to increase the output of the coal-tar derivatives now being made, which can be easily accomplished as only about 50 per cent of existing capacity is being utilised. The restricted size of the domestic market makes impractical the manufacture of a large range of products. About 200,000 kilograms of oleic acid are being produced yearly for use in making cement. Soquina also manufactures 250,000 litres of linseed-oil-based paints annually, and equipment is being installed to triple production.

Shortages of containers for paint, ammonia, and other products, have restricted output. Some of these problems are less difficult now, and Soquina plans to expand production in the field of sulphonated oils and soaps.

GERMAN IRON ORE
Low Grade Deposits

Because Germany receives no imported iron-ore, she has to rely entirely on her own low-grade deposits. Before the war, the rate of exploitation amounted to 60 to 65 per cent, a figure that was increased during the war to no less than 80 per cent. In 1946, however, owing to the lack of equipment, electric power and labour, there was a decline to 18 per cent.

Iron ore output in 1938 totalled 11,800,000 tons, of which as much as 11,000,000 tons (ferrous content of 3,200,000 tons), were suitable for smelting. Production in 1946, however, amounted to only 3,400,000 tons, of which 2,600,000 (ferrous content of 700,000 tons) were usable in smelters. It appears that a peak output was reached in 1943, when output totalled some 15,000,000 tons (13,000,000 tons suitable for smelting), with a ferrous content of 3,800,000 tons.

Last year's steel production of 2,300,000 tons was largely the result of drawing on considerable reserves left over from the war, and foundries are at present sustaining losses which are being aggravated by the recent withdrawal of the Government subsidy of 4 Rm. per ton. Many establishments have not yet resumed operations at all. The leading iron-ore area is at present the Salzgitter area which accounted last year for 2,400,000 tons, equal to approximately 70 per cent of the total ore production.

Austrian Iron

The Austrian authorities hope to bring back the country's iron and steel production to the 1937 level of 650,000 tons. Pig-iron output for 1937 amounted to 390,000 tons. A substantial quantity of the iron and steel output was exported, pig-iron and laminated products accounting for 14.5 per cent of total exports. In October last, pig-iron production amounted to about 50 per cent of the pre-war average as compared with only 25 per cent in July, 1946. Although output was reduced by the eight-week shutdown of the Donawitz blast furnace in February owing to the fuel shortage, it is hoped that this loss will be made good by production from a second furnace which is being planned by the Austrian authorities. If her production could be restored to anything like the pre-war level.

CHEMICAL SYMPOSIUM

PRESENTED on this page are some of the principal contributors to next week's Coal and Petroleum Symposium at the University of St. Andrews. Mr. C. A. Carlow (1) will introduce the theme and the subjects which the others will discuss will be :—(2) Production of Petroleum by Synthetic Methods ; (3) The Evolution and Physical Interpretation of Synthetic Fibres ; (4) Modern Coal Gasification Developments ; (5) Acetylene Chemistry ; (6) Polythene.

Other speakers will be Prof. W. M. Cumming ; Mr. A. E. MacColl ; Dr. C. E. Hall : Dr. Charles Egloff : Prof. John Read ; Mr. J. H. Brown ; Dr. R. Hill ; Prof. Wynne-Jones ; Dr. Per-olof Kinnell ; Prof. J. N. Bronsted.

1. Mr. C. A. Carlow.

2. Major Kenneth Gordon (I.C.I. Ltd., Billingham)

3. Prof. W. T. Astbury (University of Leeds)

4. Dr. D. T. A. Townend (Director, B.C.U.R.A.)

5. Prof. E. R. H. Jones (Imperial College, London)

6. Dr. J. C. Swallow (I.C.I. Ltd., Plastics Division)

PARLIAMENTARY TOPICS

Carbon Black.—A strong argument for immediate steps to utilise for carbon black production " the gas which is escaping at the rate of millions of cubic feet a day in the Middle East "—notably in the oilfields operated by the Anglo-Iranian Oil Company—was made by Mr. J. Lewis in the course of the Consumer Goods (Shortages) debate. He recalled long negotiations with the Board of Trade, in the course of which the Board notified him in November, 1945, that it agreed that we should lessen our dependence on the U.S.A. for carbon black and that proposals were being considered to establish its manufacture at home and in the sterling area overseas. Eventually, said Mr. Lewis, a team was sent by the Board to Germany with a view to acquiring channel black plant to set up in Persia. There was no tangible result. Mr. J. Belcher (Parliamentary Secretary, Board of Trade), in the course of a long reply, said that the project had been carefully gone into and at present, for reasons which it was not politic at this moment to disclose, production in Persia was not a practicable proposition. In reply to a written question by Mr. Lewis, the President of the Board of Trade (Sir S. Cripps) stated that following the visit of a deputation to the U.S.A., shipments of carbon black would increase from July 1, and would be sufficient to allow gradual accumulation of stocks.

Free Market for Fertilisers.—After careful consideration of the potash supply prospects for the 1947-48 fertiliser year, I have decided that all restrictions now in force on the acquisition and use of potassic fertilisers shall be withdrawn as from July 1.—The Minister of Agriculture (Mr. T. Williams).

New Vegetable Oil?—Mr. Peter Freeman asked the Under Secretary of State for Dominion Affairs whether he will make a statement on the production of a new vegetable oil in Tongaland, South Africa; whether the Government is making a grant towards its development; what acreage has been allocated for an experimental plantation; and how long it is expected before commercial exportation can be made to this country. Mr. A. G. Bottomley (Under Secretary of State for Dominion Affairs) said he had no information on the subject.

Trade Allocations.—Mr. J. Morrison asked the President of the Board of Trade for a list of raw materials which are allocated or imported and distributed by trade associations acting as Government agent. Sir S. Cripps gave a list which included the following: casein, rosin and liquid rosin, turpentine, pine oil, linseed oil for the paint trade, glycerine for the paint trade, caustic potash, carbonate of potash, rotenone-containing materials, tin for the pin trade, lead for capsules, collapsible tubes and patent glazing, lead for sheet and pipe (partially).

Dead Sea Minerals.—Mr. R. R. Stokes asked the Secretary of State for the Colonies whether he is aware that, according to the investigations made in 1923 into the mineral resources of the Dead Sea, the amount of magnesium chloride available was estimated at 22,000 million metric tons which, together with other salts, at the then ruling prices, amounted to a value of £240,000 million; and why these resources have not been developed. —Mr. Creech Jones: I am making inquiries of the High Commissioner for Palestine and will communicate with my hon. friend when I have his reply.

Government Metal Purchases. — Mr. Keeling asked the Minister of Supply, which metals are still being imported or bought exclusively by the Government; and which have been released from Government control. —Mr. J. Wilmot (Parliamentary Secretary): The following metals are imported or bought exclusively by the Ministry of Supply: Chrome ore, lead, zinc, copper (blister and electrolytic), virgin aluminium, pig iron, steel. The metals and ores which have been released for private importation, subject to licence, are: Aluminium scrap, antimony, bauxite, cryolite, iron powder, manganese, molybdenum, silicon, tunsten, vanadium, zinc concentrates.

Aluminium Scrap.—185,000 tons of aluminium scrap have been recovered at Governmental metal-recovery depôts, and 44,000 tons sold. The remainder has been melted down to secondary aluminium ingot. The metal was used during the war in the manufacture of aircraft and afterwards for the aluminium house.—MR. J. WILMOT.

TOO MANY CIVIL SERVANTS

THE directive by the Cabinet for a reduction of 10 per cent in Ministerial staffs is not being implemented. That is the substance of a complaint which the National Union of Manufacturers has sent to the Prime Minister recalling that the Cabinet had asked Ministers to effect a 5 per cent reduction in staffs by March last, with a further equivalent reduction in October. The Union " notes with great disappointment " that Government staffs in April last still numbered 717,000, only 5000 fewer than in January and more than were employed in 1945 or 1946. The Union has now sought an assurance that a reduction of 10 per cent, as a minimum, will be made by October next.

A CHEMIST'S BOOKSHELF

Chemicals: Servant or Master? Bob Edwards. The National Labour Press, Ltd. Pp. 123. Appendix 20. Price 3s. 6d.

The title of this book is theatrical, as befits a publication which seeks to appeal to that hopeful section of the public which would like to "know all about" a highly complex subject in the time occupied by a short train journey and likes its little learning better if it has a lurid twist. In the last respect this production by the Acting General Secretary of the Chemical Workers' Union in co-operation with the National Labour Press, Ltd., certainly fills the bill, invoking (since contemporary shockers in the "sweated labour" department of industry are in the shortest kind of supply) some decidedly moving examples of hardship and suffering by chemical workers—from the records of Keir Hardie! This, however, is in fact only the garnishing of the main theme, which might better have been entitled "Now Let's Nationalise the Chemical Industry." The reason: it is still making big and regular profits (as well as an extraordinary amount of essential chemicals) and is anything but a "closed shop" from the T.U.C. point of view. If the reader is in agreement he will be gratified to note that, because of the concentration of a large part of the heavy chemical industry under the control of a few great undertakings (of which the Imperial Chemical Industries company is given a full length portrait and numerous incidental references), the industry is ripe for the Government basket and could apparently be plucked with next to no trouble at all.

Reclaimed Rubber. The Story of an American Raw Material. By J. M. Ball. New York: The Rubber Reclaimers' Association, Inc. 1947. Pp. 248. $5.00.

This book, initiated and sponsored by the Publishing Association can be considered as the first book devoted exclusively to the subject of reclaimed rubber. A good deal has been written on this subject, of course, but the writings are scattered through countless magazines, books, pamphlets, reports, and patents over a long period of years. It ably covers a wealth of material, collects new data, and presents the whole in a connected form. The result is not a scientific monograph or handbook, but rather a collection of historical, commercial and technical facts on the important industry of rubber reclaiming.

The book is divided into ten chapters, the first of which deals with the early history of this subject. The following chapters cover the various processes for reclaiming scrap rubber, reaching back as far as 1853 when Charles Goodyear was granted a British Patent for the first acid process, which N. Chapman Mitchell developed to an industrial application. Arthur Hudson Marks was the leading figure where the alkali process is concerned, since when nine miscellaneous processes have attained a certain degree of commercial importance, and are briefly discussed in the book. The story of reclaiming is supplemented in a following chapter by remarks on the history and activities of some of the companies now engaged in the manufacture of reclaimed rubber. The next chapters emphasise the economic necessity of the conservation and utilisation of this waste material in peace and especially in war, describe the three leading manufacture processes: the digester, the heater and the acid process, as well as properties and uses. It shows that a certain amount of reclaimed rubber is essential to the manufacture of rubber products, because it possesses certain qualities not found in crude.

The text is well supported by 80 illustrations, by graphs and statistics, and is accompanied by a selected bibliography. The book will be of great interest and help to all who are engaged in this old, yet ever-changing business of rubber reclaiming, now also extended to synthetic rubber scrap.

Foremost among those who are resisting the forces which in this country—and even more ruthlessly elsewhere—seek to eliminate individual liberties and responsibilities is Dean Inge, the former Dean of St. Paul's, whose journalism loses none of its trenchancy with advancing years. This vigour, almost unique, is again apparent in "The Twilight of Freedom" (Post-War Questions No. 30; the Society of Individualists and National League of Freedom, 6d.) in which the Dean studies with refreshing realism the totalitarian trend which in Germany brought the world to disaster and is entrenched even more strongly in other parts of the world to-day under the style of "anti-fascism."

Personal

SIR F. W. DE GUINGAND has been appointed a director of Anglo-Alpha Cement.

MR. JAMES BROWN, a director of Allied Ironfounders, has retired.

MR. D. J. B. COPP, of University College, Southampton, has been appointed assistant secretary of the British Association.

MR. H. H. JOHNSON, Bury, chairman of the Dyers, Bleachers and Textile Workers' Union, has been appointed to a union post at Bolton.

MR. E. S. WADDINGTON, of Philips Industrial (Philips Lamps, Ltd.), has been elected vice-chairman of the Resistance Welding Machine Section of the British Electrical and Allied Manufacturers' Association.

MR. A. H. CLEMINSON has been appointed chairman of Reckitt and Colman in succession to the late Mr. Albert L. Reckitt, and MR. J. B. UPTON has been appointed a vice-chairman jointly with SIR BASIL E. MAYHEW.

MR. J. L. ADAM, C.B.E., M.I.N.A., chief surveyor to The British Corporation of Shipping and Aircraft, has been elected 1947-48 president of the Institute of Welding, and DR. J. H. PATERSON, F.R.I.C., vice-president.

LORD MCGOWAN, chairman of I.C.I., has been elected president of the British Standards Institution in succession to Lord Woolton. The new chairman of the general council is SIR CLIFFORD PATERSON, who succeeds Sir William Larke.

MR. E. Q. MINNING, a director of Ajax Chemical Co., Pty., Ltd., of Sydney, is in Britain for the purpose of inquiring into the question of manufacturing certain heavy chemicals, such as sodium sulphide, in Australia.

DR. HENRY PHILLIPS, a principal scientific officer of the Wool Industries Research Association, has been appointed director of research of the British Leather Manufacturers' Research Association. He succeeds the late Dr. Dorothy Jordan-Lloyd.

MR. E. J. BRUNNING, president and general manager of the Consumers Glass Company, Montreal, and former coal controller for Canada, has been elected a director of the Government-owned Polymer Corporation in succession to Albert G. Guthrie, who has resigned.

The Board of Trade announce that the following have been appointed additional members of the Council of Industrial Design: MR. H. C. WILSON BENNETTS, technical director of Allied Ironfounders, Ltd.; MR. G. W. LACEY, director and general sales manager of British Aluminium Co., Ltd.; and DR. W. J. WARBOYS, chairman of the Board of Plastics Division, Imperial Chemical Industries, Ltd.

DR. W. H. BANKS has been appointed research superintendent of the Printing and Allied Trades Research Association. Dr.

Dr. W. H. Banks

Banks, who joined P.A.T.R.A. in 1933, was principally concerned with research into ink drying and electro-deposition.

The Royal Society of Tropical Medicine and Hygiene have awarded the Chalmers Medal for 1947 to DR. D. GARNET DAVEY, I.C.I. Dyestuffs Division. The Chalmers Medal, for distinguished contributions to research in tropical medicine, is awarded biennially to scientists under the age of 45. Dr. Davey's work on the therapy of malaria played a significant part in the discovery of the anti-malarial drug Paludrine. At the age of 34 he is the youngest recipient of this medal.

The chairman and directors of Thos. W. Ward, Ltd., gave a complimentary lunch on Friday, June 20, at the Royal Victoria Hotel, Sheffield, to MR. WALTER JOHNSON, who resigned the position of secretary of the company on June 30 after 59 years' service, and the opportunity was taken to make a presentation. Mr. Johnson has held the position of secretary for 27 years. In making the presentation the chairman said that Mr. Johnson's experience and service over a period of great development had been of the utmost value to the company. Mr. Johnson will still retain his directorship of Thos. W. Ward, Ltd. The company has appointed MR. HERBERT BERESFORD to succeed Mr. Johnson as secretary.

Obituary

The death has occurred at Greenock, of MR. DAVID TEMPLETON, who was formerly employed as a chemist in the Brewers' Sugar Refinery, Greenock, before taking up the post of manager of the Taikoo Sugar Refining Company, Hong Kong, in 1900.

Overseas News Items

Prospecting for Bauxite. — Aluminium Laboratories, an Aluminium of Canada subsidiary, has renewed permits for bauxite prospecting at Pengarrang in the State of Johore, Malaya.

Canada's Rising Exports.—Canada exported goods to the value of $267,800,000 during May, representing an increase of $77,000,000 over the preceding month, and $70,000,000 over May, 1946.

Edible Oils for Germany.—For the first time since the occupation of Germany began, edible fats and oils are to be imported into the joint British - American zones from America and Argentina. The imports will cost British and American taxpayers a total of £2 million. They represent a month's ration.

Australian Imports and Exports. — Australia imported £11,078,000 of oils, fats and waxes during the 8-month period ended February, 1947, the export figures for the same period being £A 948,000; the corresponding figures for paints and varnishes were £591,000 and £A 220,000, and drugs, chemicals and fertilisers £5,670,000 and £A 3,368,000.

U.S. Rubber Consumption.—It is reported from the U.S. that domestic rubber manufacturers there consumed 395,798 long tons of natural and synthetic rubber during the four months ending April, as compared with 325,872 long tons for the corresponding period of the previous year. 222,208 tons of synthetic rubber were used by industry as against 173,590 tons of the natural material.

Canada's Regional Research. — The National Research Council at its quarterly meeting has approved the establishment of a regional research laboratory at Halifax, Nova Scotia. The laboratory will be built on the campus of Dalhousie University and will be closely integrated with the scientific activities of the university and of the Nova Scotia Research Foundation.

Geneva Trade Talks Extension.—It is reported from Geneva that the world trade talks, still in progress there, and which were planned to end on July 3, may carry on until mid-August. Some of the smaller delegations point out that they lack sufficient members to attend the sub-committees set up to consider the new International Trade Organisation's charter. Since each member of the conference is at present negotiating with 6-12 other countries, it has been found necessary to rearrange committee meetings with a view to overcoming the difficulty.

U.S. Petroleum Imports and Exports.—U.S. imports of petroleum products fell from 15,638,000 barrels in March to 13,887,000 in April, while exports rose from 13,093,000 to 13,640,000.

Dutch Steel Works Now Producing.—The rolling equipment of the Royal Netherlands Blast Furnaces and Steel Works, which had been looted by the Germans in 1943, has now been returned, reconditioned, and put into operation.

Chilean Chemicals.—The price of sulphate of soda, which is now being produced in the Antofagasta district at the rate of about 10,000 tons per month, has risen during the past 12 months from 300 to 800 pesos per ton, owing to the strong demand.

Stockholm International Congress.—1500 delegates from 20 countries are attending the eighth International Management Congress which opened at Stockholm on July 3. It is the first such meeting to take place since the war. The British party, consisting of representatives of 100 firms, is being led by Viscount Leverhulme.

Chilean Copper Sales Corporation.—The Chilean Government has announced its intention of proceeding with the formation of a Copper Sales Corporation to assist the national copper-mining industry, and to provide a central organisation designed to diminish the effects of any economic difficulties which might arise in that industry in the future.

South African Ore Outputs. — Latest statistics issued by the Union of South Africa Department of Mines for period January to September, 1946, show an increase in the production of chrome, manganese and iron ore. Compared with the previous year, the output of the two first-named has been more than doubled, while iron ore production rose from 610,000 tons to over 721,000. Exports of asbestos of all varieties declined from 17,802 to 13,186 tons during the same period.

1170 Steel Furnaces in U.S.—On January 1, 1947, when annual steel capacity totalled 91,241,250 net tons, the number of steel-making furnaces in the United States was 1170, ranging in size from small furnaces producing only a few tons at a time to units making 400 tons per heat, according to the American Iron and Steel Institute. The total of 1170 included 924 open hearth furnaces, 29 Bessemer converters and 217 electric furnaces. The number of blast furnaces at the start of this year, when capacity totalled 65,709,200 tons per year, was 233.

Home News Items

Tungsten Ore Prices.—Prices of tungsten ore have been reduced by 10s., present prices now ranging from 135s. to 145s. per unit, c.i.f.

New Office.—Richard Klinger Ltd., manufacturers of compressed asbestos jointing and boiler fittings have opened a new branch office and depot at 19 Queen Street, Newcastle-on-Tyne.

Cement Output.—534,000 tons of cement were produced in May, as compared with the monthly average for 1946 of 548,000 tons. Exports are being reduced to 50,000 tons per month, destinations being specially approved by the Government.

Five-day Strike.—An unofficial strike which began on June 19 at the United Steel Company's Beckermet No. 1 iron mine in West Cumberland, ended on June 23. The dispute arose over deductions from underground workers wages.

Paper Output.—Output of paper throughout April rose to a weekly average of 22,011 tons, representing about 56 per cent of the pre-war weekly average. This is an improvement on the February and March totals, but is less than the average weekly figure of 23,767 tons for January.

Scotland Wants Research Stations.—The Scottish Regional Council of the Federation of British Industries decided at its quarterly meeting in Glasgow to urge the Government to provide adequate research facilities in Scotland. It was pointed out that the majority of Government-sponsored research stations were located in the south-east of England.

Cordite Explosion.—One man died and two others were seriously injured after a Royal Ordnance factory explosion, at Glascoed (Monmouthshire), on June 27. All three were injured as they were carrying cordite. It is understood that one man was taken home after the accident. The others were admitted to the Monmouthshire County Hospital, Panteg (Mon.). Details are still being kept secret.

£3 Million Gas Project.—The Ministry of Fuel has given its approval to the first step in a scheme involving the expenditure of £3 million by the United Gas Corporation for reorganising and increasing facilities for gas production in Northern Cheshire. Work is to begin immediately on the erection of a new gasworks at Denton to be opened by the North Cheshire and District Gas Company, which will cost £1,250,000 and have a capacity of 6 million cu. ft. of gas a day.

Chilean Copper.—A cargo of 5000 tons of Chilean copper, the first to be received since 1939, arrived at Swansea on June 21.

Oil and Fat Prices.—The Ministry of Food announces that no changes will be made in the prices of unrefined oils and fats and technical animal fats allocated to primary wholesalers and large trade users during the 5 weeks ending August 2, 1947.

Paint Control Amendment.—The Board of Trade has made the Control of Paint (Amendment) Order 1947 (a), which came into operation on July 1 and slightly adjusts the existing Order—The Control of Paint, etc. (No. 3) Order, 1942. It is S.R.O. 1947, No. 1292 and costs 1d.

Chemical Firm in Legal Dispute.—A long-standing legal dispute between Bury Corporation and a chemical firm is to be settled by a compromise agreement, states *The Manchester Evening News*. Costs are to be paid by the firm. The cause of the dispute has been kept secret.

Model Distillation Plant.—Correction: The London Aluminium Co., Ltd., makers of the remarkable scale model of a modern distillation and solvent extraction plant, states that the model depicted (THE CHEMICAL AGE, June 7) is, of course, not capable of performing all the functions of the full-sized plant.

Fuel Research Centre.—Falkirk has been recommended as the site of a national fuel research centre for solid fuel burning appliances. That is the recommendation of the Scottish Fuel Efficiency Committee to the Ministry of Fuel, based on the fact that some 75 per cent of all such appliances are made in the Falkirk area.

Metal Furnaces Available.—An electrically-operated vertical furnace, 21¾ ft. by 3½ ft. internal diameter with a temperature range of 350°-450° C., and a gas-fired zinc melting furnace (maximum 1000° C.) are among the plant now being offered for disposal by the Directorate of Disposals, Ministry of Supply, Room 531, Great Westminster House, Horseferry Road, London, S.W.1.

Since 1765.—Because recent announcements by Ministers leave little doubt as to the intention of the Government to proceed with nationalisation of iron and steel it appeared "the liquidation of this company, whose roots go back to 1765, may be only a matter of time," states Mr. Andrew White, chairman of Pease and Partners, Darlington, owners of quarries and iron works, in the firm's report for 1946.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for errors that may occur.

Mortgages and Charges

(Note.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every company shall, in making its Annual Summary, specify the total amount of debt due from the company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.)

WELLCOME FOUNDATION LTD., London, N.W., chemical manufacturers. (M. 28/6/47.) May 9, £250,000 (not ex.) mortgage to Wellcome Pension Fund; general charge. *Nil. July 22, 1946.

PEEL LABORATORIES, LTD., London, W.C. (M., 5/7/47.) May 15, series of £2000 (not ex.) debentures, present issue £500; general charge. *Nil. January 14, 1947.

ASHE LABORATORIES, LTD., London, S.W. (M., 5/7/47.) May 13. mortgage to Martins Bank, Ltd., securing all moneys due or to become due to the Bank; charged on Acme Works, Leatherhead, with plant, fixtures, etc. *—. May 12, 1946.

GRIFFIN & TATLOCK LTD., London, W.C., philosophical and chemical instrument makers. (M. 28/6/47.) May 14, charge to National Provincial Bank Ltd. securing all moneys due or to become due to the Bank; charged on plot of land near Willow Lane, Mitcham, with fixtures, &c. *Nil. July 14, 1946.

NORTHERN INDUSTRIAL CHEMICALS LTD. Kirkby. (M. 28/6/47.) May 17, £6930 mortgage to City of Liverpool; charged on land with buildings thereon at Kirkby Trading Estate, Kirkby (lately Royal Ordnance Factory) known as 6A6, 6A9, 6A7, 6A8, 6A10, 6A11 and air raid shelters with fixed factory plant and fixtures.

INTERNATIONAL CORRODELESS LTD. Enfield, metallurgists. (M. 28/6/47.) May 13, by order on terms, resolution of shareholders dated March 25, 1947, confirming and ratifying a charge dated May 28, 1946, and registered June 11, 1946, to Lloyds Bank Ltd. securing all moneys due or to become due to the Bank; general charge. *£25,000. April 8, 1947.

CHROMOCINE, LTD. (formerly CHEMICAL DEVELOPMENT CO., LTD.), London, W., chemical dealers. (M., 5/7/47.) May 27, mortgage to Martins Bank, Ltd., securing all moneys due or to become due to the Bank; charged on 147 and 149 Kensal Road, Kensington, with machinery, fixtures, etc. *£4000. May 28, 1946.

PURE CHEMICALS LTD., London, W. (M. 28/6/47.) May 14, £13,050 mortgage to City of Liverpool; charged on land with buildings thereon at Kirkby Trading Estate, Kirkby (lately Royal Ordnance Factory) known as 6C1 to 6C17 (inclusive), 6D10, 6D12, 6D14 and air raid shelters, with fixed factory plant and fixtures. *Nil. December 3, 1946.

Satisfaction

WARD BLENKINSOP & CO., LTD., London, W., manufacturing chemists. (M.S., 5/7/47.) Satisfaction May 21, of debentures registered August 18, 1941, to the extent of £4500.

Company News

The nominal capital of **Electro-Colloids Ltd.**, mechanical, electrical and chemical engineers, etc., 2 Southey Road, S.W.19., has been increased beyond the registered capital of £10,000, by £10,000, in £1 6 per cent cumulative participating preference shares.

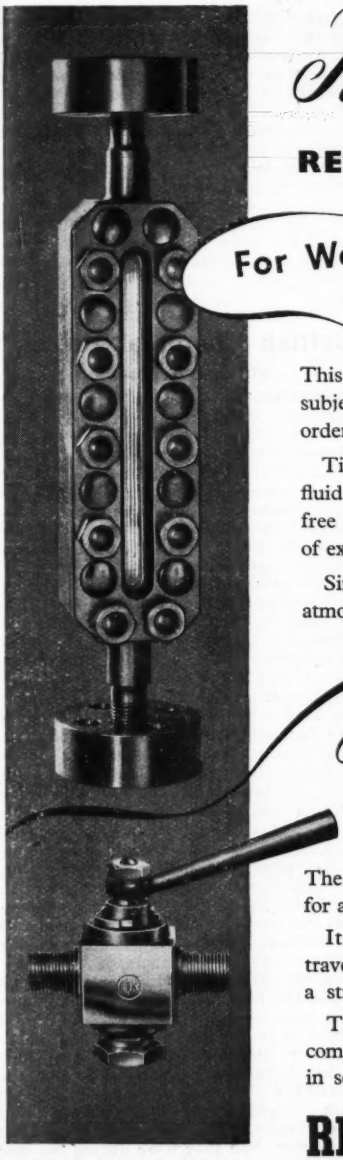
Limmer and Trinidad Lake Asphalt announces a trading profit of £98,209 compared with last year's figure of £85,224. A final dividend of 7 per cent is being recommended, making a total of 10 per cent for the year as against last year's total dividend of 8½ per cent.

Ballito Hosiery Mills Ltd. has announced a net profit for the year just ended of £11,571 as against the previous year's figure of £11,058. A dividend of 12½ per cent has been recommended on the ordinary shares, and approximately 9½ per cent on the preference shares.

British Coal Distillation proposes to create and issue at par £25,000 of 5 per cent prior lien participating debenture stock to rank before existing first debentures, and entitled to receive 30 per cent of net profits in each year until redemption at par on July 1, 1957.

Chemical and Allied Stocks and Shares

STOCK markets could hardly be otherwise than depressed in view of the Paris Conference news of the all-important question of U.S. aid to Europe and the Government's proposed "cuts" in imports which have emphasised the serious position now taking shape. There was no big liquidation, but small selling persisted and prior to the commencement of the new Stock Exchange account the lower prices failed to attract buyers. Weakness in British Funds has featured with a further all round decline, 2½ per cent Treasuries at 91¾ touch-



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ing the lowest level since dealings commenced at the beginning of this year. Shares of industries affected by the proposed "cuts" in imports weakened, although elsewhere, textile shares hardened on the big drive expected in export markets.

Chemical and associated shares were not immune from the market reaction, but in most cases movements on balance were moderate, the industry's big scope for expansion being more widely recognised. Imperial Chemical eased to 51s. 3d., Monsanto Chemicals were 61s. 3d., while Fisons at 67s. 6d. have been steady following the statements at the meeting. Borax Consolidated at 60s. 6d. have been helped by market views as to the scope for higher dividend, and elsewhere, Cooper McDougall & Robertson have changed hands around 43s., the big agricultural and kindred developments and the £100 million Corporation for Colonial development opening up scope for expansion in the activities of chemical fertiliser and kindred companies, according to prevailing views.

Reflecting market conditions, Dunlop Rubber came back to 77s. 10½d., but General Refractories at 25s. 6d. have been relatively steady, and British Aluminium have eased to 50s. 3d. despite current reports of active trading. Elsewhere, Amalgamated Metal gave way to 18s. 9d., and Imperial Smelting were 20s. 6d., although British Match strengthened a little to 48s. 3d. Turner & Newall at 90s. have moved back, and in other directions, Lever & Unilever receded to 52s. 9d., while Metal Box eased to £5 15/16 following the new capital proposals. There were only moderate movements in the iron and steel sections, but Richard Thomas & Baldwins strengthened to 13s. 6d. on the higher dividend. United Steel were 25s. 9d., and Stewarts & Lloyds eased to 54s. 4½d., but Baldwins Holdings firmed up to 7s. 7½d. Babcock & Wilcox at 77s. 9d., and Clarke Chapman at 63s. 9d. lost part of their recent gains, and Allied Ironfounders after reflecting satisfaction with the dividend, eased to 70s. 3d. Low Temperature Carbonisation 2s. shares gave way to 5s.

The unchanged British Plaster Board dividend caused a little disappointment in the market and the 5s. shares receded to 31s. Associated Portland Cement were steady at 74s. 6d. Elsewhere, British Glues 4s. ordinary remained at 20s. 9d. Beechams deferred have eased to 26s. 7½d., and Sangers to 38s. 6d., while Griffiths Hughes were 58s. 6d. Glaxo Laboratories have come back to £25½, and British Drug Houses eased to 62s. 6d. following publication of the full results. Lawes Chemical 10s. shares were 14s. 6d., and Major & Co.'s 2s. ordinary 5s. 3d. On the other hand, B. Laporte have come back to 101s. 3d., and W. J. Bush to 93s. 9d., but the shares were held firmly and not in large supply in the market.

Activity in oil shares became less pronounced, although sentiment remained under the influence of the exceptionally big expansion in the Anglo-Iranian profits and the raising of the dividend from 20 per cent to 30 per cent. Anglo-Iranian shares after rising 30s. to £9¾ came back to £9½, and Burmah Oil at 88s. 9d. were higher on balance partly because of the company's large shareholding in Anglo-Iranian. Shell, however, fell to £5½, while V.O.C. lost part of the rise which followed the full results and Lobitos were only moderately higher, oil shares coming under the influence of Mr. Dalton's "cut" in petrol imports.

British Chemical Prices

Market Reports

PRESSURE for supplies describes most sections of the industrial chemicals market and the demand for home account and for shipment shows no sign of diminishing. Values throughout the market are firm and while price alterations are expected in some directions nothing has been notified at the time of this report. The home production position is reported to be improving and delivery specifications are being met with regularity. There have been no outstanding features in the coal-tar products market where all available supplies are finding a ready outlet.

MANCHESTER.—The demand for heavy chemicals from the cotton textile and allied trades has been affected to a slight extent by the incidence of the annual holidays in one or two Lancashire towns, but the industrial demand generally on the Manchester market is on steady lines and in the aggregate substantial deliveries are being called for. Additional business in the alkalis and other leading "heavies" has included a fair amount on home trade account, with shippers also prominent with inquiries for export. The movement of fertiliser materials is now distinctly quieter. In the tar products market new orders have been on a moderate scale, with a steady absorption of supplies against existing commitments.

GLASGOW.—Business in the Scottish chemical trade has been well up to standard during the past week. In the export market a number of orders have been booked, particularly for bleaching powder, for which there has been a heavy demand. In the home market, the main shortages have been calcium chloride, calcium nitrate and Glauber's salts. The first two have been much shorter than they were during the war years. The shortage of Glauber's has been accentuated by the difficulty of crystallisation during the hot weather.

Patents in the Chemical Industry

The following information is prepared from the Official Patents Journal. Printed copies of specifications accepted may be obtained from the Patent Office, Southampton Buildings, London, W.C.2., at 1s. each.

Manufacture of a new pyrimidine compound.—Ciba, Ltd. Nov. 29, 1945. 32838-39/46.

Manufacture of a new condensation product of sulphathiazole.—Ciba, Ltd. Nov. 29, 1945. 33442-43/46.

Manufacture of hardenable emulsions serving as binding agents, especially for printing with pigments.—Ciba, Ltd. Nov. 28, 1945. 34249-50/46.

Manufacture of derivatives of the cyclopentanopolyhydrophenanthrene and polyhydrochrysene series.—Ciba, Ltd. Nov. 30, 1945. 34887-90/46.

Manufacture of long chain alkyl-substituted aromatic hydrocarbons.—E.I. du Pont de Nemours and Co. Nov. 28, 1945. 35146/46.

Process for the production of dibasic carboscylic acids.—E.I. du Pont de Nemours and Co. Nov. 30, 1945. 35436/46.

Pulsation elimination in liquid streams.—Fluor Corporation, Ltd. Nov. 27, 1945. 35053/46.

Sulphur-containing dicarboxylic acids and method of preparing same.—B. F. Goodrich Co. Nov. 28, 1945. 32480/46.

Beta-acyloxy halides and method of preparing same.—B. F. Goodrich Co. Nov. 28, 1945. 32478/46.

Alkyl esters of alpha-beta unsaturated carboxylic acids and method of preparing same.—B. F. Goodrich Co. Nov. 28, 1945. 32479/46.

Powder metallurgy.—C. Hardy, Inc. March 4, 1942. 13447/47.

Dispersion of carbon black.—J. M. Huber, Inc. Nov. 28, 1945. 28510/46.

Apparatus for the automatic indication and regulation of the viscosity or concentration in liquids.—K. T. Kalle. Nov. 30, 1945. 35240/46.

Production of polyvinyl compounds.—Kodak, Ltd. Oct. 30, 1945. 32249/46.

Production of gelatin.—Kodak, Ltd. Nov. 27, 1945. 35239/46.

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